



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
27.07.2005 Bulletin 2005/30

(51) Int Cl.7: **H01L 29/78**, H01L 29/08,
H01L 29/417, H01L 29/45,
H01L 21/336

(43) Date of publication A2:
08.06.2005 Bulletin 2005/23

(21) Application number: **04106161.5**

(22) Date of filing: **29.11.2004**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL HR LT LV MK YU

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(30) Priority: **05.12.2003 EP 03425782**

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(54) **LDMOS structure and method of making the same**

(57) In a DMOS structure the N⁺ mask used for implanting the source region in self-alignment with the spacers formed on the edges of definition of the opening through the polysilicon gate layer (POLY), masks from the N⁺ implant an orthogonal strip across the full width of the poly opening, practically leaving in the masked area only the LDD N-source diffusion. This represents a discontinuity of the N⁺ source diffusion in the source region defined by the opening through the polysilicon layer, along with the W direction of the integrated DMOS structure. Furthermore, P⁺ mask that is used for implanting the P⁺ dopant in the crossover area with the N⁺ mask, for realizing the body connection plug diffusion P⁺ and which eventually also increase the total do-

pant species concentration in the silicon region extending along the central axis of the source region in the width direction W of the integrated structure though without inventing the type of conductivity conferred to it by the higher N⁺ source implant, is centered about the central axis of the source region in the W direction.

In this way, the body connection plug diffusion P⁺ is defined by way of the orthogonality of the two masks N⁺ and P⁺ (crossover area), without accounting for any overlay. The no longer critical character of the two masks and consequent elimination of overlays permits a significative reduction of the transversal width of the openings through the polysilicon gate layer and consequently a reduction of the pitch of integration.

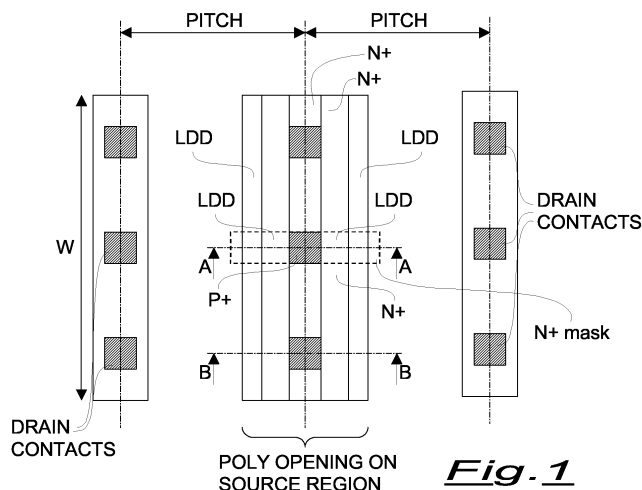


Fig. 1

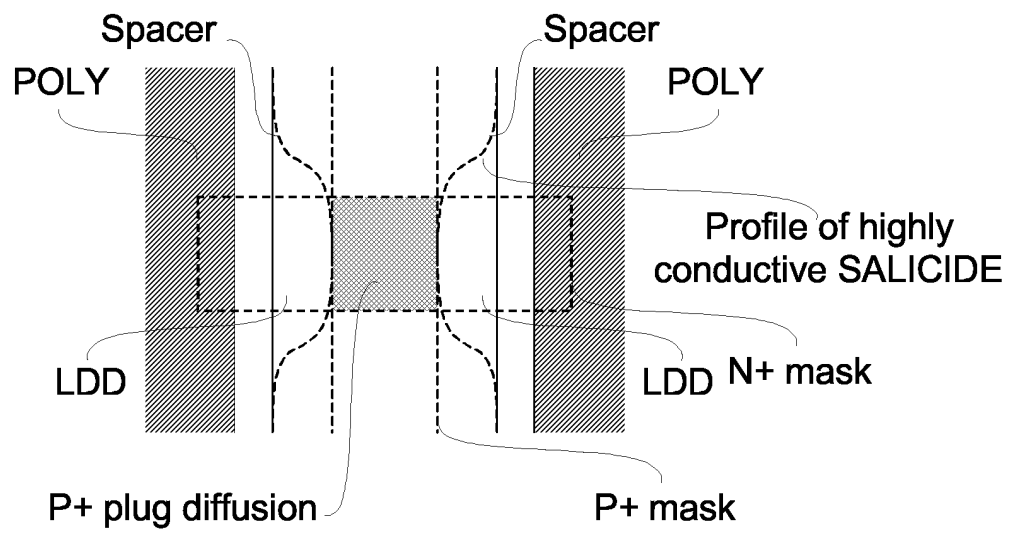


Fig. 4



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 10 6161

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A	* column 4, line 64 - column 7, line 18; figures 6-9 *	3,4	H01L29/08
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A	PATENT ABSTRACTS OF JAPAN vol. 005, no. 159 (E-077), 14 October 1981 (1981-10-14) & JP 56 088363 A (NEC CORP), 17 July 1981 (1981-07-17) * abstract; figures 4a-4b,6a-6b *	1,3	

			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H01L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 June 2005	Examiner Morvan, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 10 6161

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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